

What is claimed is:

1. A model optimization apparatus, comprising:
  - a detection unit detecting one or more redundant
  - 5 shapes from a plurality of shapes forming a
  - three-dimensional model of an object;
  - a deletion unit deleting shape information
  - relating to the one or more redundant shapes; and
  - a construction unit reconstructing a
  - 10 three-dimensional model of the object according
  - to remaining shape information.
2. The apparatus according to claim 1, wherein:
  - said detection unit detects an unnecessary
  - 15 shape for an outline of the three-dimensional model from
  - the plurality of shapes; and
  - said deletion unit deletes the shape
  - information about the unnecessary shape.
- 20 3. The apparatus according to claim 2, wherein:
  - said detection unit detects two shapes having same
  - outline information and offsetting each other; and
  - said deletion unit deletes the two shapes.
- 25 4. The apparatus according to claim 2, wherein:

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25           said deletion unit deletes shape information of

one of the two shapes, amends shape information of the other shape, and integrates shape information of the two shapes into shape information of one shape.

5 8. The apparatus according to claim 5, wherein:

said detection unit detects two or more shapes having same arrangement plane information and same height information; and

10 said deletion unit amends shape information of one of the two or more shapes, deletes shape information of other shapes, and integrates shape information of the two or more shapes into shape information of one shape.

15 9. The apparatus according to claim 5, wherein:

said detection unit detects two or more shapes defined as pattern shapes; and

20 said deletion unit amends shape information of one of the two or more shapes, deletes shape information of other shapes, and integrates shape information of the two or more shapes into shape information of one shape.

10. The apparatus according to claim 1, wherein:

25 said detection unit comprises:

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a deletion target storage unit for storing a list of shapes to be deleted among the one or more redundant shapes; and

an amendment target storage unit for storing a list of shapes to be amended among the one or more redundant shapes;

said deletion unit deletes shape information of the shapes to be deleted, and amends shape information of the shapes to be amended; and

said construction unit reconstructs the three-dimensional model according to the amended shape information and shape information of shapes other than the one or more redundant shapes.

11. The apparatus according to claim 10, wherein

said deletion unit amends the shape information of the shapes to be amended according to at least one of vertex coordinate information and height information included in deleted shape information.

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12. The apparatus according to claim 1, wherein

said construction unit comprises a unit for amending arrangement reference information, as necessary, included in the remaining shape information, and reconstructs the

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three-dimensional model according to the amended arrangement reference information.

13. The apparatus according to claim 1, wherein  
5       said construction unit comprises a unit  
for generating a pseudo shape corresponding to  
arrangement reference information included in the  
remaining shape information, and reconstructs the  
three-dimensional model using the pseudo shape without  
10       amending the arrangement reference information.

14. A computer-readable storage medium storing a  
program used to direct a computer to perform:

      detecting one or more redundant shapes from  
15       a plurality of shapes forming a three-dimensional  
model of an object;

      deleting shape information relating to the one or  
more redundant shapes; and

      reconstructing a three-dimensional model of  
20       the object according to remaining shape information.

15. A method of optimizing a model, comprising:  
      automatically detecting one or more  
redundant shapes from a plurality of shapes forming a  
25       three-dimensional model of an object;

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automatically deleting shape information relating  
to the one or more redundant shapes; and

automatically reconstructing a  
three-dimensional model of the object according to  
5 remaining shape information.

16. A model optimization apparatus, comprising:

detection means for detecting one or more  
redundant shapes from a plurality of shapes forming a  
10 three-dimensional model of an object;

deletion means for deleting shape information  
relating to the one or more redundant shapes; and

construction means for reconstructing a  
three-dimensional model of the object according  
15 to remaining shape information.

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